

From Static TLFs to Insightful Exploration: An Interactive-First Approach with Teal



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Disclaimer

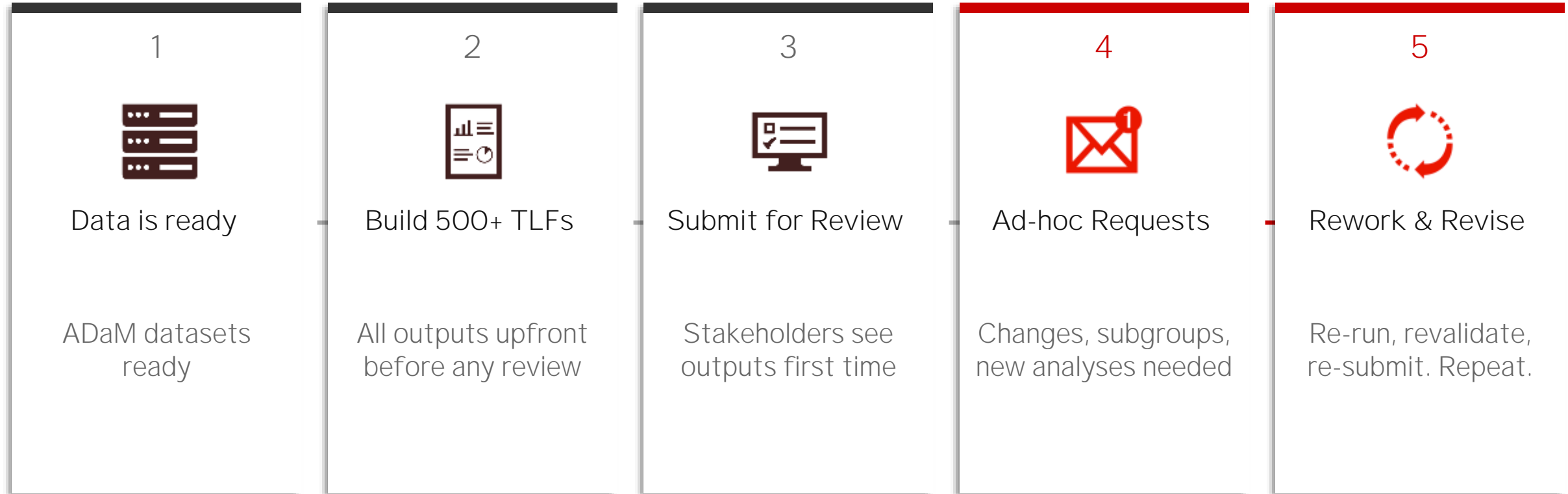
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Traditional Reporting: How It Works Today



💡 The problem: Outputs are built before stakeholders know what they need – leading to inevitable rework cycles

It's 11pm. The Review Meeting Is at 9am.



7 new ad-hoc requests

"Can we add a subgroup by age?" "Split by site please."
All at 10:45pm.



Re-run everything

Programs re-run → RTF regenerated → QC re-checked
Every. Single. Time.



Weeks of repeated effort

Hundreds of TLFs built upfront and revised multiple
times. Most will never make it to CSR.



Frustrated stakeholders

Reviewers don't get what they need until it's too late to
act on it strategically.

What If You Explored Before You Produced?

Interactive-First: Let stakeholders explore the data dynamically – and only crystallise static outputs for what truly matters.

01



Explore First

02



Collaborate Early

03



Finalise What
Matters



Teal Package

- 1 Open-source R package:
Part of Pharmaverse
- 2 Built on R Shiny:
Creates interactive web-applications
- 3 Pre-Built Clinical Modules:
Plug & Play
- 4 Auto-Generation of R Code:
Seamless integration in clinical flow



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Pre-Built Modules for Every Analysis

`tm_t_events()`

Adverse Events

ADAE-based summary tables with system organ class and preferred term.

`tm_t_summary()`

Patient Summary

Demographic and baseline characteristics from ADSL.

`tm_g_km()`

Kaplan-Meier

Survival curves from ADTTE with censoring and risk tables.

`tm_t_exposure()`

Drug Exposure

Treatment duration, dose intensity from ADEX.

`tm_g_scatterplot()`

Scatter / Box Plots

Continuous variable exploration with group overlays.

`tm_t_shift_by_grade()`

Lab Abnormalities

Shift tables and grade summaries from ADLB.



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Teal Package

Module (1) Report

Home / Adverse Event Table

+ Add to Report **Show R code**

Active Data Summary

Data Name	Obs	Subjects
ADSL	400/400	400/400
ADAE	244/244	145/145

Filter Data

ADSL	+
ADAE	+

Encodings

Datasets: ADSL, ADAE

Select Treatment Variable

Dataset: ADSL

Select

ARM

Event High Level Term Dataset:

ADAE

Select

- Nothing selected -

Event Low Level Term Dataset:

ADAE

Select

SOC_PT MedDRA SO^x

Event Summary by Term : MedDRA SOC and Preferred Term

	B: Placebo	C: Combination
	(N=134)	(N=132)
Total number of patients with at least one adverse event	70 (52.2%)	75 (56.8%)
Overall total number of adverse events	111	133
cl D.1 / dcd D.1.1.1.1	42 (31.3%)	51 (38.6%)
cl B.1 / dcd B.1.1.1.1	49 (36.6%)	43 (32.6%)



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Teal Package

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Event Summary by Term : MedDRA SOC and Preferred Term

MedDRA SOC and Preferred Term
Total number of patients with at least one adverse event
Overall total number of adverse events
cl D.1 / dcd D.1.1.1.1
cl B.1 / dcd B.1.1.1.1

Download icon (highlighted in red)

File type

formatted txt

csv

pdf

File name (without extension)

table_20260327_221443

Download icon



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Teal Demo: Demographics

Module (5) Report

Home / Demographic Table

Active Data Summary

Data Name	Obs	Subjects
ADSL	200/200	200/200

Filter Data

ADSL

Encodings

Dataset: ADSL

Select Column Variable(s)

Select

ARM Description of Pla

Add All Patients column

Summarize Variables

Select

AGE Age, SEX Sex

Additional table settings

Display NA counts

if any

no

Choose the statistics to display for numeric variables

n

Mean (SD)

Mean 95% CI

Description of Planned Arm	A: Drug X (N=69)	B: Placebo (N=73)	C: Combination (N=58)	All Patients (N=200)
Age				
n	69	73	58	200
Mean (SD)	34.1 (6.8)	35.8 (7.1)	36.1 (7.4)	35.3 (7.1)
Mean 95% CI	(32.51, 35.76)	(34.18, 37.51)	(34.19, 38.09)	(34.35, 36.33)
Geometric Mean	33.5	35.2	35.4	34.7
Median	32.8	35.4	36.2	34.8
Median 95% CI	(30.84, 36.77)	(32.63, 37.82)	(33.36, 37.59)	(32.91, 36.26)
25% and 75%-ile	28.2 - 39.9	30.1 - 39.5	30.5 - 40.6	29.6 - 39.9
Min - Max	22.4 - 48.0	23.3 - 57.5	23.0 - 58.3	22.4 - 58.3
Sex				
n	69	73	58	200
F	38 (55.1%)	40 (54.8%)	32 (55.2%)	110 (55%)
M	31 (44.9%)	33 (45.2%)	26 (44.8%)	90 (45%)
Race				
n	69	73	58	200



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Teal Demo: Time to Event

Module (5) Report

Home / Kaplan Meier Plot

Active Data Summary

Data Name	Obs	Subjects
ADSL	200/200	200/200
ADTTE	1000/1000	200/200

Filter Data

- ADSL +
- ADTTE +

Encodings

Datasets: ADSL, ADTTE
 Select Endpoint Dataset: ADTTE
 Filter by: PFS Progression Free Su*

Analysis Variable
 Select: AVAL

Censor Variable
 Select: CNSR

Facet Plots by Dataset: ADSL
 Select

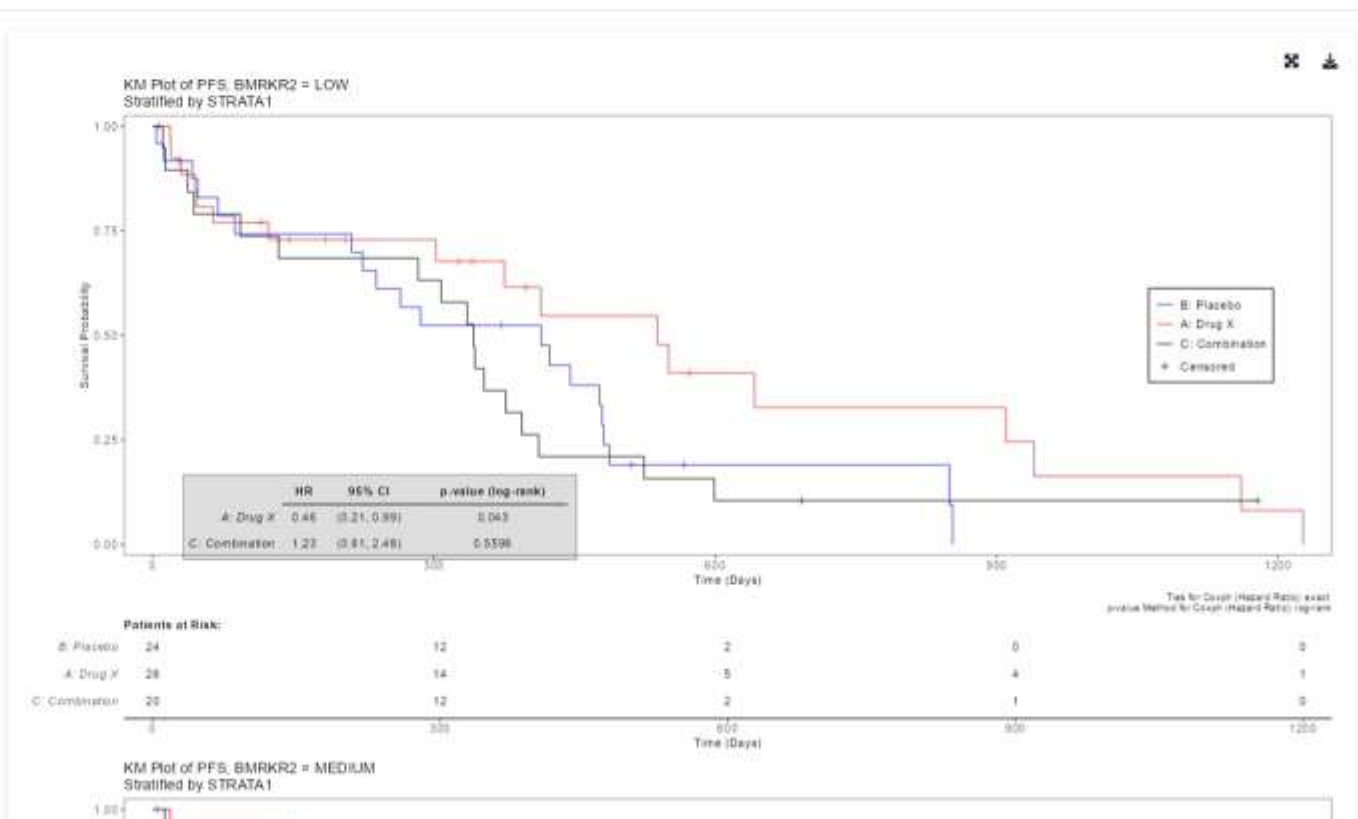
BMRKR2 Continuous*

Select Treatment Variable
 Dataset: ADSL
 Select

ARM Description of PK *

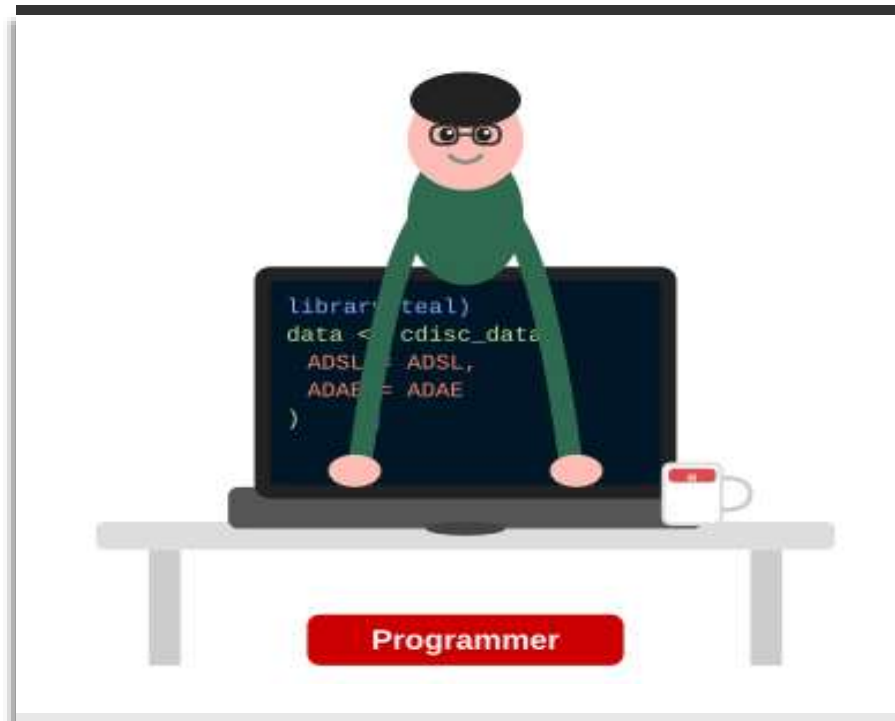
Compare Treatments

Groups



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Multiple Roles, One Shared Tool



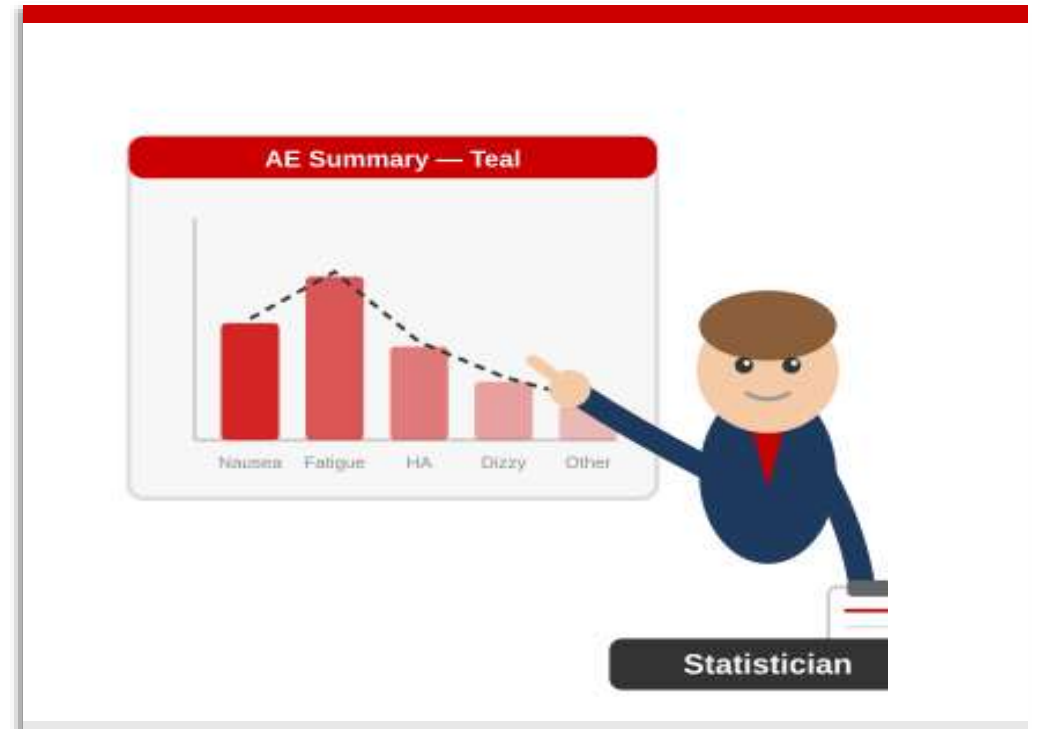
Builds the Teal app once. Adds modules, configures filters, deploys to Shiny Server. No more re-running scripts for every new request.

R

Shiny

teal.modules

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Explores data interactively during review. Applies filters, selects populations, compares arms – all in real time without waiting for code changes.

Live analysis

Filters

Review

Everyone Explores. Together.



1

Programmer builds app
One Teal app configured with all relevant modules and filter panel.

2

Stakeholders explore
Apply population filters, select variables, inspect summary live.

3

Team agrees on outputs
The roles align on exactly which TLFs to finalise — no surprises.

4

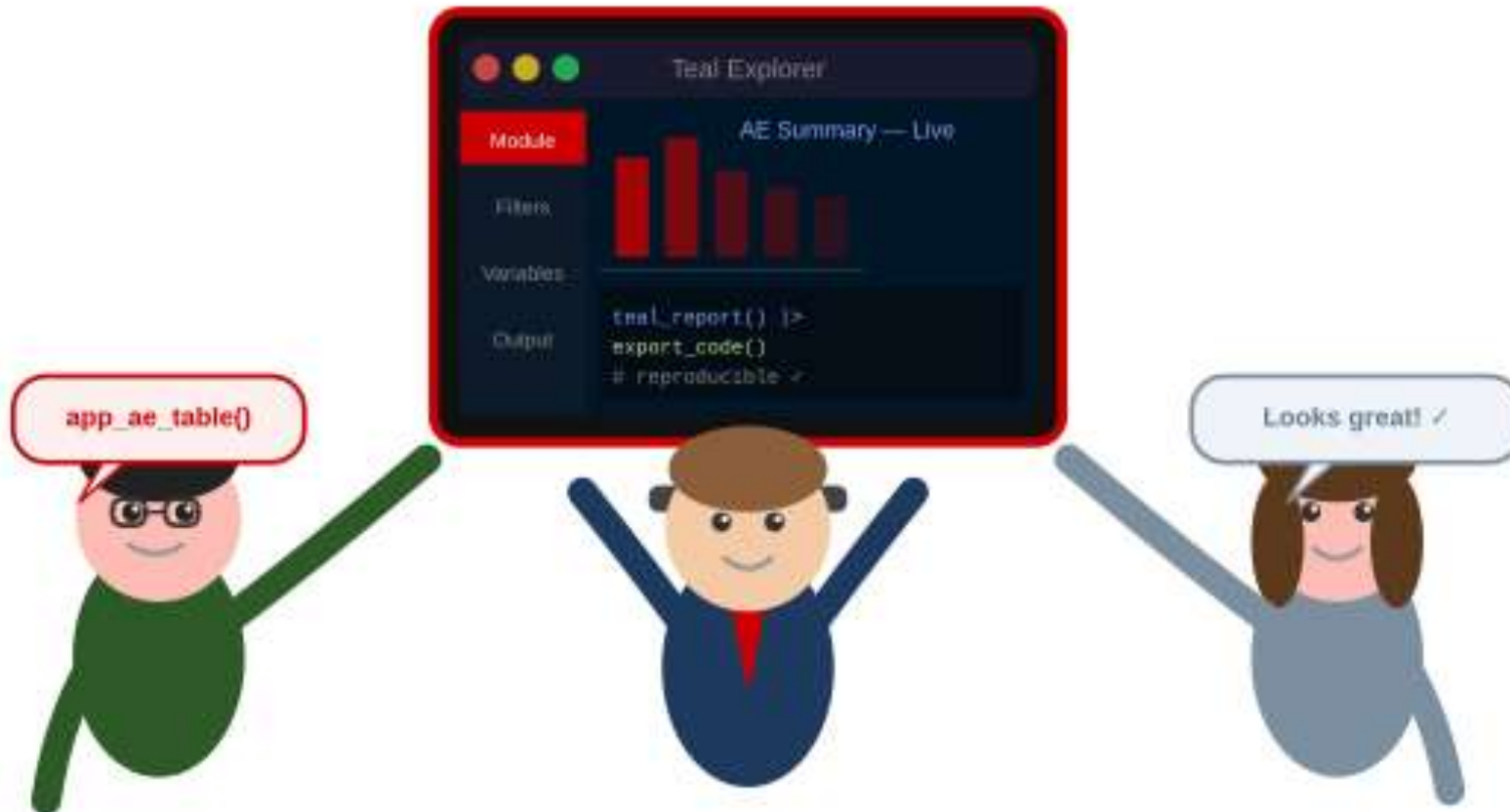
Code auto-generated
One click exports reproducible R code ready for validation pipeline.

Everyone Explores. Together.



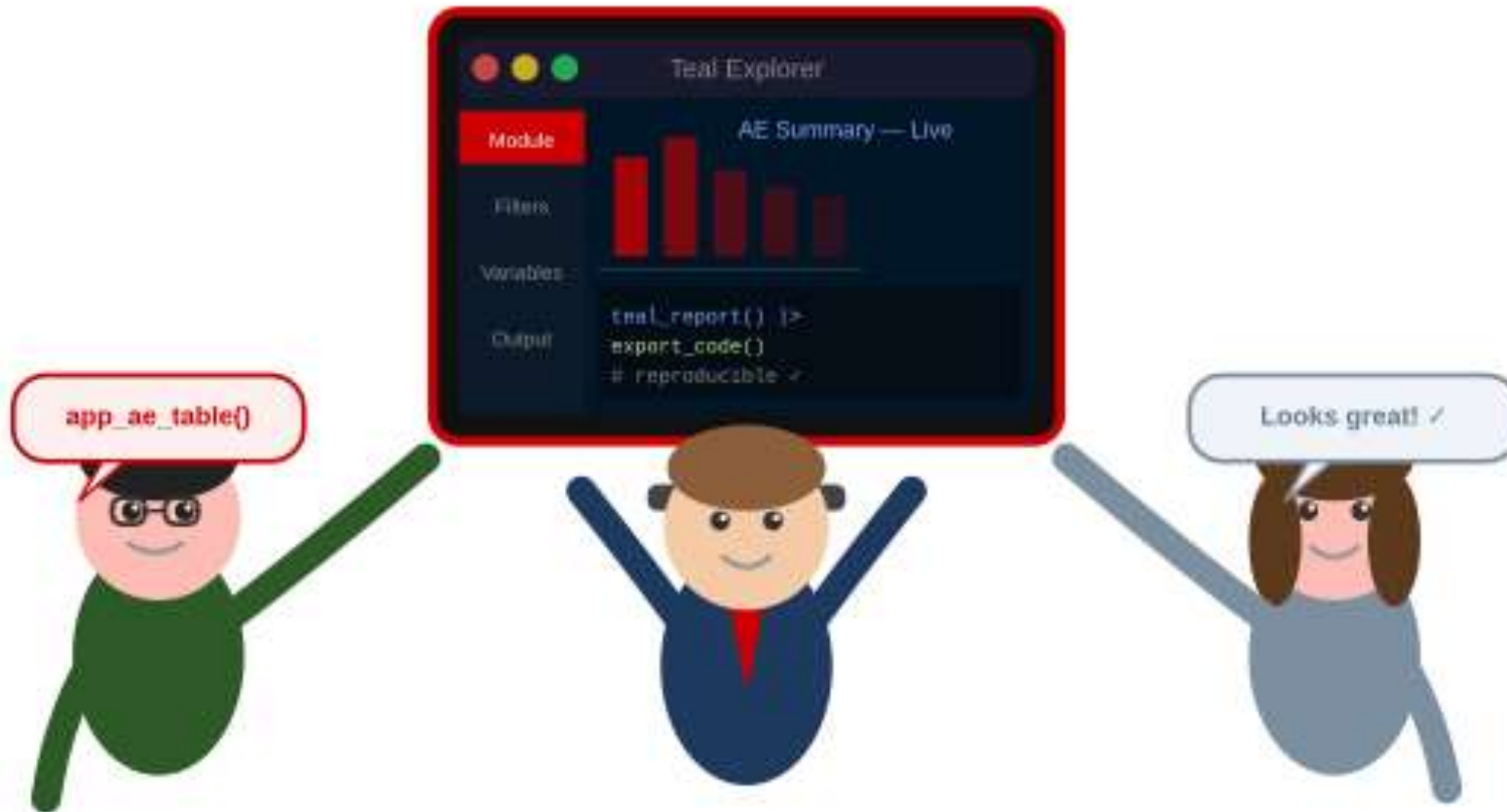
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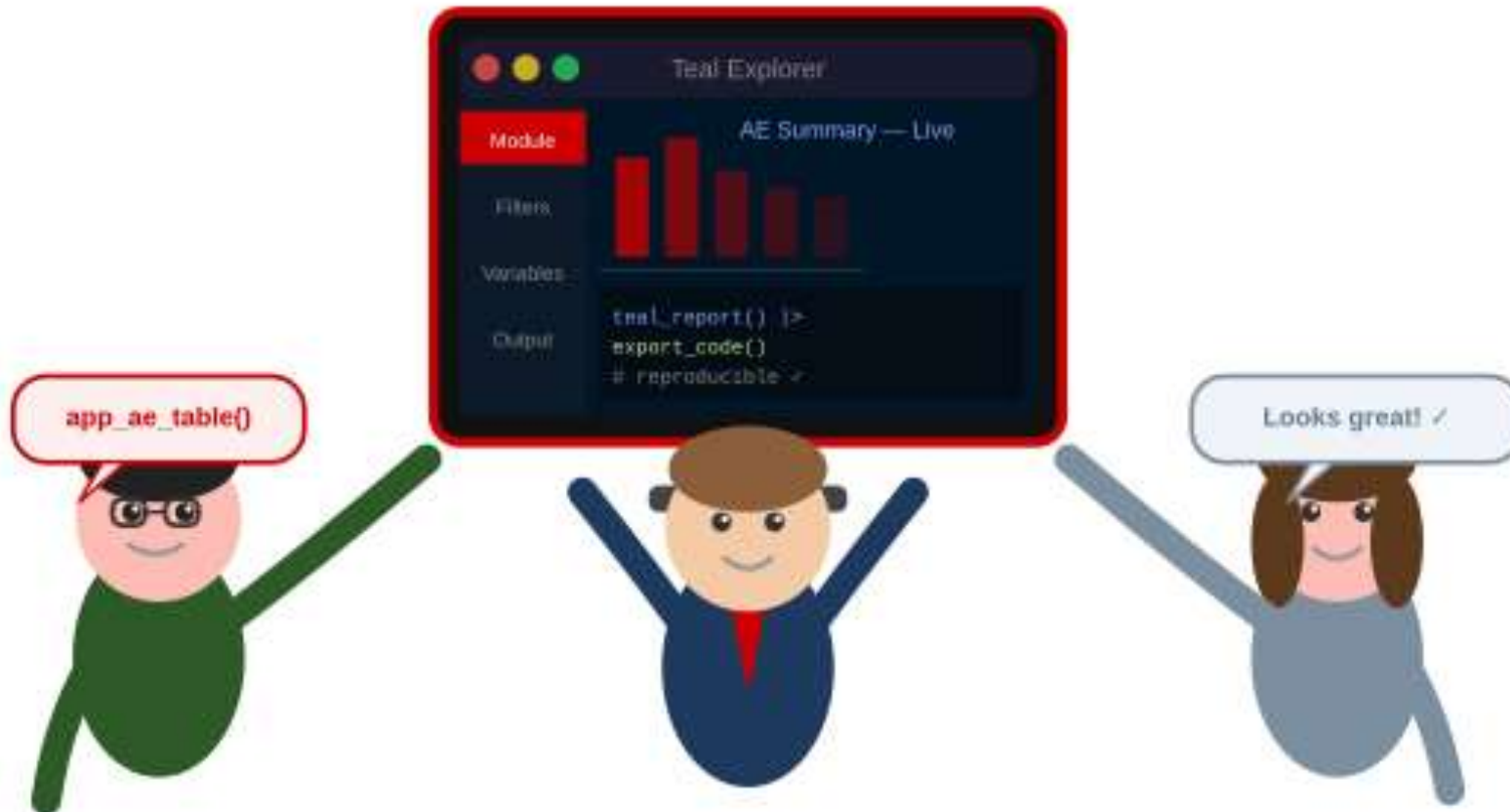
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Getting Started with Teal



Teal package docs
insightengineering.github.io/teal



Pharmaverse website
pharmaverse.org



teal.modules.clinical
insightengineering.github.io/teal.modules.clinical



GitHub Repository
github.com/insightengineering/teal

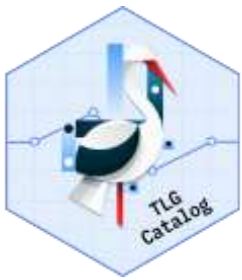


Gallery of sample apps
insightengineering.github.io/teal.gallery



TLG catalog
insightengineering.github.io/tlg-catalog/stable





TLG Catalog

The screenshot shows the TLG Catalog website. At the top, there is a dark navigation bar with the text "TLG Catalog - Stable" on the left and "Stable" with various icons on the right. Below this, the main content area is divided into a left sidebar and a main body. The sidebar contains a logo and a list of navigation items: Introduction, Tables, Listings, Graphs, Appendix, and Index. The main body features a large heading "TLG Catalog" followed by a descriptive paragraph: "The TLG catalog is a catalog of Tables, Listings, and Graphs for clinical trials generated using NEST packages. This repository provides a comprehensive collection of clinical trials outputs generated using the R language. The target audience is the clinical trials community, including statisticians, data scientists, and other professionals interested in applying R to clinical trials data." Below this is a section titled "Usage" with a list of bullet points: "Setup and pre-processing of synthetic data.", "Steps to produce the TLG.", "The output TLG generated by the given code (including any available variants).", "An interactive application that can alternatively be used to produce and interact with the TLG.", and "Reproducibility information." A link to the "Index page" is provided. At the bottom of the main body, there is a section titled "Interacting with Catalog R Code". On the right side of the main body, there is a vertical list of links: "On this page" followed by "TLG Catalog", "Usage", "License", "Contributing", and "Development", and "Edit this page" and "Report an issue". A small TLG Catalog logo is also present on the right side.



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<https://insightengineering.github.io/tlg-catalog/stable/>

Adopting Teal in Your Teams

1

Week 1–2 Install & Explore

Install teal and teal.modules.clinical. Run the demo app. Familiarise your team with the UI.

2

Week 3–4 Pilot on one study

Pick one active clinical study. Replace 3-5 ad-hoc TLF requests with a shared Teal app.

3

Month 2 Integrate with pipeline

Connect Teal to your ADaM generation workflow. Add to Shiny Server or posit.cloud.

4

Month 3+ Scale across studies

Standardise modules, share across teams. Establish the Interactive-First process as team norm.



From static TLF overload to dynamic, collaborative, reproducible analysis

Let's start exploring together.

50+*

Static TLFs eliminated

∞

Ad-hoc requests avoided

1

Teal app, endless insights

*Numbers are for illustration only



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Thank you

If you have more questions, please contact:

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